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The Diagnosis and Treatment of Pyometra in Cattle

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UTTOXETER

By the term "pyometra," we are referring to the condition described by Nielsen[1] as endometritis of the third degree, and in all the cases mentioned the distension of the uterus has never been less than that corresponding to a three months' pregnancy.

The incidence of pyometra in cattle is not precisely known in this country, but every practitioner, we are sure, encounters a case from time to time. Until recently the majority of such animals were probably sent to the slaughterhouse or an attempt made to drain off the pus by various mechanical means.

It is the purpose of this short paper to discuss its diagnosis and methods by which expulsion of the pus may be brought about by inducing contraction of the uterus itself. The simplest way of effecting such contraction is by inducing oestrus, for animals with pyometra do not come into oestrus, and examination of the ovaries always reveals a corpus luteum in one or the other. It is the presence of this body in the ovary which maintains the uterus in its flaccid state and it is, therefore, reasonable to assume that if its regression can be brought about, the animal will come into oestrus and contraction of the uterus will occur with expulsion of the pus.

The injection of stilboestrol will bring about this regression and has a number of advantages over manual removal:—

Firstly, in large pyometras the ovary or ovaries may not be palpable.

Secondly, the corpus luteum is usually deeply embedded and difficult or impossible to enucleate.

Thirdly, the pressure required to enucleate such a corpus luteum may result in haemorrhage or damage to the ovary itself, leading to the formation of adhesions or possibly to perforation of the rectum if too severe pressure is exerted. The danger of infection of the ovary up the fallopian tubes after expression of the corpus luteum is, moreover, theoretically much greater in cases of pyometra or endometritis than in the healthy uterus.

Fourthly, the injection can be repeated if necessary.

The physiological actions of the natural hormone oestrone are briefly as follows:—

(*a*) Increased cellular activity in the tubular genitalia with outpouring of mucus.

(*b*) Sensitisation of the uterus to the oxytocic factor of the posterior pituitary causing contractions of the uterine musculature.

(*c*) Dilatation of the os uteri.

(*d*) Some slight swelling of the vulva.

(*e*) Increased flow-elasticity of the mucus.

(*f*) A desire to mate (not always shown when using synthetic oestrogens).

(*g*) Increased mammary activity.

(*h*) Regression of the corpus luteum if present.

All these actions can be reproduced to a varying degree by the use of the synthetic oestrogens, *e.g.*, stilboestrol or its dipropionate.

The actions required for the treatment of pyometra are:—

1. Regression of the corpus luteum.
2. Dilatation of the os uteri.
3. Prolonged contractions of the uterus and expulsion of the pus.

The intramuscular injection of stilboestrol or its dipropionate will fulfil these requirements in the vast majority of cases.

DIAGNOSIS

The diagnosis of pyometra by rectal palpation is not as easy in some cases as one is led to believe by current literature. In a recent article by Gould, Hignett and Steele-Bodger[2], it was stated, "In pyometra due to any cause, palpation of the uterus conveys an entirely different impression from that of pregnancy," and "In pyometra, the uterine wall is thickened and the uterine arteries, although they may be enlarged and a pulse easily discernible, lack the characteristic 'thrill' associated with pregnancy." Examination of a number of cases of pyometra has led us to believe that these statements are not entirely accurate. Cases of pyometra, particularly those associated with trichomonas, are often almost indistinguishable from pregnancy by rectal palpation unless the exact service date is available, in which case the discrepancy between the estimated character of the uterus and the actual features palpated would lead to a positive diagnosis. In such cases, the uterus often feels like that of an animal 3½ months pregnant. It has a fluid feel, a corpus luteum is present in the ovary and there is often no thickening of the uterine wall. Fremitus has not always developed at this stage and the most important point of all is that pyometras due to this cause sometimes contain a partly-digested foetus the size of a small rat and palpation of this (as in Case No. 1) will almost always lead to a diagnosis of pregnancy. It seems probable that in these animals, the foetus develops to the 3-3½ months' stage and that the placenta dehisces from the uterus at this point with subsequent development of pyometra. Cotyledons would not have developed at this stage and the only distinguishing feature by rectal palpation is to pinch up a fold of the uterus and allow it to slip gradually through the finger and thumb, when the foetal membrane will be felt slipping away before the uterine wall is released.

Examination *per vaginam*, however, usually reveals a dilated cervix into which a finger can be inserted, while there is no uterine seal. Sometimes animals will show an intermittent discharge and this, together with absence of oestrus, is often a good indication that pyometra is present.

The history of the case, if available, is valuable and one's suspicions may immediately be aroused, but in cattle running with the bull, where no service dates are kept, the above difficulties may be encountered.

The absence of fremitus has been mentioned as a diagnostic feature, but as this is not detectable in the normal animal until three to four months and since on rectal palpation some pyometras feel about the size of a 3-3½ months' pregnancy, it cannot in such cases be considered as diagnostic. Apart from this point, Case No. 12, although having a pyometra corresponding in size to a uterus four months' pregnant, showed distinct fremitus in the uterine artery.

In all the cases recorded here, a corpus luteum was present in one ovary. In the cases of unilateral pyometra it was present in the ovary of the affected horn. The presence of a bilateral enlargement of the uterus with a corpus luteum in one ovary only can be considered as almost diagnostic. Diagnosis may also be established by re-examining the animal at a later date when palpation of the cotyledons would be possible in a normal pregnancy. It must be borne in mind, however, that the uterus in cases of pyometra may grow in size at approximately the same rate as in normal pregnancy and so confuse the diagnosis up to 3½ months. We have no personal observations on this point as treatment was initiated after the primary examination in each case.

Kostner[3] concludes that pyometra results from the death of the embryo *in utero*. The uterine contents are at this stage sterile and are likely to remain so while the cervical plug is present. Autolysis of the foetus and the membranes causes accumulation of fluid in the uterus. Emptying does not take place as the corpus luteum of pregnancy persists and inhibits contraction of the uterus. Trichomonas is regarded in a different light from other organisms in that it can cause the initial death of the foetus.

TREATMENT

Three rational possibilities are open to the clinician:—

1. Introduction of a two-way catheter through the cervix and mechanical douching out of the uterus with some antiseptic solution aided by massage through the rectal wall. This is a very tedious process and in many cases is well-nigh impossible.
2. Expression of the corpus luteum.
3. Injection of one of the synthetic oestrogens. We have used stilboestrol or its dipropionate in a dose of 20-25 mgm. intramuscularly with great success. In an average case, it is our custom to re-visit in a week's time and irrigate the uterus as for ordinary endometritis with 1/500 aqueous iodine solution, and if necessary, repeat the injection.

In a suitable case, the results are spectacular. Pus begins to pour out in 24 hours and continues like this until the uterus is comparatively empty, the remaining pus being discharged at odd intervals over a period of a few days. No posterior pituitary extract need be given at any time.

In very large pyometras, however (see cases 5 and 9), results have not been quite so conclusive. This, we presume, is due to the gross abnormal distension causing a lack of uterine tone. Slight cervical relaxation takes place, so that one can insert the end of the little finger through the external os. Cervical manipulation at this stage, with a further injection of stilboestrol, seems to achieve the desired result.

On an average, complete involution of the uterus back to normal occurs within a fortnight and oestrus appears fairly soon after this. Contrary to general belief, we have not found salpingitis and bursal adhesions to be a common accompaniment or sequel to pyometra. In only one case (Case 10) were bursal adhesions detected and these were unilateral and not severe. In one other instance (Case 3) adhesions were present, both before and after the occurrence of pyometra.

Reports

*Case No. 1.—*Subject*—Pedigree Friesian Cow, 9 years old.

This animal was examined during routine pregnancy, diagnosed by rectal palpation and was pronounced 3½ months pregnant. The owner disagreed with the stage of pregnancy since she had been bulled some seven months previously and had not been seen in oestrus since. As a small rat-sized calf could actually be palpated in the uterus, it was suggested that she must have been served at a later date. Examination *per vaginam*, however, revealed an open cervix with no uterine seal and it was then realised that, although a calf was present, the animal had pyometra.

An intramuscular injection of 25 mgm. stilboestrol was then given. Some 26 hours later the animal commenced literally to pour out pus from the vagina and in this pus was a partly-digested rat-sized calf. It seemed obvious that this foetus and its membranes had dehisced from the uterine wall at about 3½ months, but had been retained in the uterus with subsequent development of pyometra. It was later discovered that the herd was badly infected with trichomoniasis. No adhesions were found in either ovarian bursa and no thickening of the fallopian tubes could be detected.

Case No. 2.—*Subject*—Red Shorthorn Cow.

This animal was bought and her history was not available. Rectal examination revealed a unilateral enlargement of the right uterine horn comparable with that of a 3-3½ months pregnancy. The walls of the uterus were thin and there was a corpus luteum in the ovary of the enlarged side. This animal might easily have been diagnosed as pregnant had not the owner stated that she was supposed to be a newly-calved cow. Examination *per vaginam* again revealed an open cervix through which the little finger could be inserted. She was given a dose of 10 mgm. of stilboestrol intramuscularly and commenced to discharge in about 50 hours. A week later she was treated with 1/500 iodine solution and was served when she came into oestrus a week or so later. She is now in calf again. No adhesions were found in either bursa.

Case No. 3.—*Subject*—Pedigree Friesian Cow, 10 years old.

This animal aborted a 3-months' calf and developed pyometra. She belonged to a herd affected with trichomoniasis and the diagnosis of pyometra was easy in this case. A dose of 25 mgm. stilboestrol was given and examination in a week's time revealed a uterus greatly reduced in size. She was treated twice at weekly intervals with 1/500 Lugol's iodine solution and when examined a week after the last treatment, the uterus was normal. This animal came into oestrus a day or so after the last examination. Slight adhesions were present in the right ovarian bursa, but these had already been discovered several months previously, *i.e.*, before the animal became pregnant, and as far as could be judged had not increased in severity.

Case No. 4.—*Subject*—Pedigree Friesian Heifer.

This heifer belonged to the same herd as Case No. 3 and she was found on rectal examination to have a huge pyometra containing probably 4-5 gallons of fluid. Stilboestrol in a 25 mgm. dose was given, but when re-visited in a week's time she had not parted with any discharge. Examination of the cervix showed it to be open enough to admit one finger and it was decided to give a second injection using a larger dose. 40 mgm. were then given, but three days later there was still no result. A catheter was then passed through the os uteri and it was found that the anterior end of the cervix was sealed off from the body of the uterus by a membrane. This was forcibly broken down and a further injection of 25 mgm. stilboestrol given. The animal commenced to discharge the next day and continued until the uterus was empty. She was examined three weeks later and the uterus was normal in size, while neither bursa had developed adhesions.

An interesting point about this animal is that she commenced to lactate in spite of the fact that she was a maiden heifer, and when last examined was giving two gallons of milk per day.

*Case No. 5.—*Subject*—Roan Shorthorn Cow.

Examination *per rectum* revealed a very large bilateral pyometra. The uterine walls were thin and a large quantity of fluid could be detected. 25 mgm. of stilboestrol had been given a week prior to examination with no result. Examination *per vaginam* revealed an open cervix and it was decided to drain some of the pus away mechanically. This was done, using a wide catheter, together with massage through the rectum. As the uterus was still very large, a further dose of 30 mgm. was given. Three weeks later the animal was re-examined and the uterus was clinically normal; in fact, she had been in oestrus and had been bulled two days earlier. No adhesions were present in either bursa.

Case No. 6.—*Subject*—Friesian Heifer, 3 years old.

Pyometra had developed in this animal following infection with trichomoniasis and in this case the uterine wall was thickened and considerable intra-uterine pressure was detectable. A corpus luteum was present in the right ovary and this was forcibly expressed. When examined the following week, the uterus had contracted down to about normal size and she was treated by irrigation with 1/500 aqueous iodine solution. No adhesions were present in either bursa. This animal was served and held to her first service and she is now about four months pregnant.

*Case No. 7.—*Subject*—Roan Shorthorn Cow.

This case, together with Nos. 8 and 9, came from a herd suspected of being infected with trichomoniasis. All three animals had been served with a communal village bull and the owner had noticed an intermittent discharge some months after service. The above case received 20 mgm. stilboestrol dipropionate and several pints of pus were expelled the following day. She received Lugol treatment three times at weekly intervals and came into oestrus between the second and third treatment. No adhesions were present.

*Case No. 8.—*Subject*—Roan Shorthorn Cow.

The history of this animal is the same as No. 7 and she was treated in exactly the same manner. She came into oestrus a few days after Case No. 7. No adhesions were found in either bursa.

Case No. 9.—*Subject*—Blue Shorthorn Cow.

A huge thin-walled bilateral pyometra was found in this animal. She had been given 20 mgm. stilboestrol dipropionate a week previously with no effect. Examination revealed an open cervix but no discharge. A further 20 mgm. was given and during the next few days the cow parted with large quantities of pus together with a partly-digested calf about the size of a rat. She was examined 15 days after injection and the uterus was almost normal. Irrigation with Lugol's solution was carried out. The animal had not come into oestrus as yet, but there were no adhesions in either bursa.

Case No. 10.—*Subject*—Red-and-White Cow, 4 years old.

The owner was anxious about this animal as she had not been in oestrus for several months. A medium-sized pyometra was discovered on rectal palpation and 20 mgm. stilboestrol dipropionate given. This resulted in expulsion of most, but not all, of the pus and a second dose of 25 mgm. was given a week later. The following week the uterus was almost normal and the cow had been in oestrus. She was treated with 1/500 Lugol's iodine solution. Adhesions of medium severity were found in the right bursa, but whether these adhesions had been present prior to the development of pyometra is not known.

*Case No. 11.—*Subject*—Red-and-White Shorthorn, about 5 years old.

This cow had been bought three months prior to our seeing her and had not been in oestrus, while the owner mentioned that she occasionally parted with a small amount of whitish discharge. Rectal examination revealed a large pyometra of the right horn. The cervix was found to be partly open and an injection of 25 mgm. stilboestrol dipropionate was given. She commenced to discharge the following day and continued to do so for five days. The cowman mentioned that the discharge from this animal had run in a regular stream down the gutter. When examined eight days later, the uterus was small and could almost be contained in the hand. She has since been treated twice with Lugol's solution but has not yet (eleven days afterwards) been in oestrus. No adhesions were detectable in the bursae.

Case No. 12.—*Subject*—Light Roan Shorthorn, 5 years old.

After having had a normal calf eleven months previously and being served a few months after this, the cow had shown occasional

* Cases No. 1, 5, 7, 8 and 11 are now in calf again. In case No. 3 the adhesions have greatly increased in severity and it is very doubtful if this animal will breed again. (July 21st, 1942.)

slight discharge. The right horn of the uterus was found to be enlarged to the 4-months' stage of pregnancy and fremitus was present in the right uterine artery. A corpus luteum was also present in the right ovary. No foetus or foetal membranes could be palpated. The cervix was found to be open with no cervical seal. 25 mgm. stilboestrol dipropionate was given and discharging commenced the following day. When examined six days later the the uterus was only slightly enlarged. No adhesions were present in the bursae and this was the only case in which examination of the uterine artery had revealed fremitus. It seems, therefore, that the presence of fremitus is not an invariable sign of the absence of pyometra and presence of true pregnancy.

Case No. 13.—*Subject*—Friesian Cow, 5 years old.

The bull belonging to the owner of cases 1, 3 and 4 had served this animal and she had shown an intermittent discharge a few months after service. Examination per rectum revealed a very large pyometra of the right horn and an injection of 20 mgm. stilboestrol was given. Very little discharge was noticed during the next few days, but when examined ten days later the uterus was almost normal in size.

She was irrigated with acriflavine, magnesium sulphate solution and a further injection of stilboestrol given. A week later the uterus was completely normal, no adhesions having developed.

Case No. 14.—*Subject*—Shorthorn Cow, 4 years old.

After having aborted a seven-months calf this animal showed no signs of oestrus for seveal months and was occasionally seen to discharge a little pus. A colossal pyometra was discovered, each horn containing many gallons of pus. An injection of 30 mgm. of stilboestrol was given and although the owner said that he had seen no large quantities of pus voided, the uterus was found ten days later to be greatly reduced in size. Irrigation with iodine solution 1/500 was carried out and a week later the uterus was clinically normal.

Case No. 15.—*Subject*—Shorthorn Cow, six years old.

The animal was known to have been served by a bull infected with trichomonas and about four months after service commenced discharging. A large pyometra was discovered on palpation and an injection of stilboestrol given. During the following week a considerable quantity of pus was voided together with a rat-sized calf. As the uterus had not fully contracted the injection of stilboestrol was repeated and a week later the uterus was down to normal size.

Summary

1. The actions of the oestrogens are discussed.
2. The points of diagnosis of pyometra are dealt with.
3. The injection of stilboestrol is considered to be extremely efficient for evacuating the uterus although in grossly enlarged uteri the dosage may have to be repeated.
4. Fifteen clinical records are quoted to support these views.

References

[1]Nielsen, F. (1926.) N.V.M.A. Congress Handbook.
[2]Gould, Hignett and Steele-Bodger. (1942.) *Vet. Rec.* **54**. 70.
[3]Kostner, M. (1939.) *Wien. tierärztl. Mschr.* **26**. 225.

SOIL SURVEYING IN CANADA

With the object of obtaining reliable information regarding the extent and nature of the different soils in Canada the Dominion and Provincial Departments of Agriculture and the Agricultural Colleges have been jointly conducting soil surveys in most of the provinces for several years. In the summer of 1941 about twenty field parties, with two men to each party, were engaged on this work.

The amount of work done by the soil surveyors can be judged to some extent by the area of land surveyed. During 1941 this amounted to slightly over ten million acres. However, the acreage covered is not in itself a definite indication of the large amount of work done in connection with the soil surveys, as the amount of land surveyed is largely dependent on the type of survey and the nature of the country that is under examination, states Dr. A. Leahey, Division of Field Husbandry, Central Experimental Farm, Ottawa. For example, in 1941 the work done by the soil surveyors varied from detailed examination of the soils on proposed irrigation projects to surveys of lands where only a general picture of the soil conditions was required.—*Scottish Farmer.*

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Sir Robert Gower, M.P., Chairman of the R.S.P.C.A. War Animals (Allies) Fund, who recently appealed for microscopes for the Soviet Army Veterinary Corps, has already forwarded 17 to Russia. He has now received a request for additional veterinary supplies costing £6,000, and any help towards this sum will be gratefully received at the R.S.P.C.A. offices, 105, Jermyn Street, S.W.1.

Affections of the Fallopian Tubes in Cattle*

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The subject of sterility in cattle has been so thoroughly thrashed out in articles, discussions and demonstrations that it is difficult to find any points which have not already been dealt with. Nevertheless, it is my opinion that insufficient attention has been devoted to one of the most important causes of sterility in this country, *viz.*, the occurrence of salpingitis and its resultant adhesions with occlusion of the fallopian tubes. It is the belief of certain practitioners amongst us that the detection of such adhesions is not possible by rectal palpation unless they are very severe with gross enlargement of the whole affected area. Such is not the case and with a little experience even very slight adhesions can be detected quite easily. The amount of sterility due to this cause has been very much overlooked.

Williams in America in 1924, estimated that tubal lesions were responsible for 15 per cent. of sterility—the figure also estimated for South Africa. In this country an examination of about 300 cattle revealed adhesions in 13·3 per cent. of cases; some of these lesions, however, were not of sufficient severity to prevent pregnancy. On the other hand the cattle examined were not all barren but were animals slaughtered in the usual manner and many in fact were pregnant. However, these figures are sufficient to indicate that more attention might be paid to this vital link between ovary and uterus.

Amongst the known causes of salpingitis, metritis is probably the most common, infection arising by direct spread along the fallopian tubes. This is supported by the fact that animals showing salpingitis or its results frequently have a history of abortion, retained placenta or pyometra.

Tuberculous salpingitis is also quite common and lesions due to this organism are usually very pronounced and easy to detect on rectal examination.

A point to be stressed is that it is the severity of the condition and not its presence that decides whether the animal is permanently sterile or not, for animals have been found pregnant in which the bursa of the pregnant horn has shown slight adhesions. While it is possible that these adhesions may have developed subsequent to the animals becoming pregnant this is not likely, as some of the cattle were only a few weeks in calf. It is quite impossible to attempt to fix a definite state of this condition above which lies permanent sterility and below which lies probable fertility, for slight adhesions at one section of the tube alone may be sufficient totally to occlude it at that point and although the rest of the tube may be clear, such an animal would obviously be sterile on that side. Even slight adhesions should, therefore, be treated with suspicion and a guarded prognosis given.

Salpingitis in cattle is sometimes associated with a cystic condition of the ovary and it is considered by some that this is caused by infection getting into the newly ruptured follicle with subsequent cyst development. There is probably no specific organism which causes the condition, for many different organisms have been detected in the oviducts, including *Str. viridans, Staph. aureus* and *albus*; *C. pyogenes, B. coli* and *Br. abortus*, but there is some evidence that the condition frequently follows *C. pyogenes* infection. Outbreaks due to this last-mentioned organism are more common than has been generally realised and it is probably the most difficult type of infertility to deal with, a proportion of the animals becoming permanently sterile. Treatment by irrigation is usually of little value and the value of toxoid for this condition has not yet been clearly demonstrated. It is said that M & B 693 will give good results in some cases but this form of treatment is too expensive for general use.

Severe salpingitis is incurable but its detection is of great importance to the farmer, especially in war-time when economy of foodstuffs and labour is essential and such animals can be got rid of as economically as possible.

Infection of the fallopian tube in itself cannot easily be detected unless hydro- or pyo-salpinx has developed in its wake, but once the ovarian end of the tube is reached, adhesions are soon set up and the condition can then readily be detected. Adhesions are usually first set up in the funnel-shaped extremity of the fallopian tubes or between the free border of the fimbriated end and the ovary.

As the disease progresses the tube becomes thickened and more tortuous and the bursal pouch develops adhesions across its mouth so that probably only one finger can be inserted into it. Eventually the bursa becomes totally occluded and the whole area, including the ovary, may become involved. In such cases the ovaries are frequently not palpable at all but are buried in masses of adhesions; this is frequently so in salpingitis due to tuberculosis. Hydrosalpinx can occur with or without palpable adhesions but it is easily detected

* Paper, with demonstrations and exhibits, presented to the Derbyshire Division, N.V.M.A., at the meeting held in Sutton Bonington on April 23rd, 1942.

owing to the great enlargement of the fallopian tubes. As a result of infection, enlarged mucous folds are formed in the tubes and these form septa between cystic dilatations. These septa may then break down so that the whole tube becomes more or less evenly distended and the thickness of an ordinary pencil. If the original infection has sealed off the ovarian end of the fallopian tube with adhesions, it is unlikely that the bursa itself will be affected—but more often than not, the bursa, tube and ovary are all affected.

The fluid contained in the distended tubes is usually clear but may contain a few flocculi, while the tubal walls become very thin and transparent. Pyosalpinx is said to occur in acute cases where occlusion of the lumen of the tube takes place early. This condition is clinically indistinguishable from hydrosalpinx but adhesions are more frequently present.

Tuberculous salpingitis, as already stated, is fairly common and the adhesions formed are usually extensive and nodular in character. It is probably the most common cause of salpingitis in heifers. Trichomoniasis, followed by the common complication of pyometra, is generally believed to cause adhesions in most cases, but four cases of trichomonas and two suspect cases of pyometra due to this cause were recently found, subsequent to treatment, to be quite normal and one of these animals is now in calf again. An unusual type of adhesion was found recently in a second-calf heifer which had aborted her last calf. The owner had tried to clear up the discharge which followed abortion, by irrigation with Supersan solution and had apparently pumped a considerable quantity of fluid into the uterus. The animal showed signs of great pain and was ill for ten days afterwards but then recovered and appeared quite normal. When examined a few weeks ago the right horn of the uterus was found adherent to the pelvic wall and the ovary could not be palpated. The uterus had apparently ruptured, due to pressure of fluid, and very severe adhesions had followed. The left horn ovary and bursa were normal. The site of rupture is interesting in this particular case. In the normal uterus excessive pressure from air or fluids almost always causes rupture along the attached border but in the case of the post-parturient animal apparently it can occur at other points.

In any case of salpingitis it is important not to squeeze out the corpus luteum as this offers every opportunity for further adhesions to develop. One case has been seen in which the corpus luteum had been squeezed out and dropped into the ovarian bursa causing very severe adhesions. There are two methods of removing the corpus luteum. The first is to squeeze the ovary away from the corpus luteum so that the latter remains held between the fingers and thumb and then to drop it, while the second is to hold the ovary and squeeze the corpus luteum out so that it drops away immediately. The chances of it falling into the ovarian bursa would seem to be much greater if the first method is used.

As there is no effective treatment for adhesions once they have developed, prevention of their development is the only method to adopt.

Pasteurisation of milk for calves, tried out in America, is said to reduce the incidence of the condition but in this country the incidence of abortion and the practice of allowing cleansings to rot away is probably by far the most important cause. Such cases are bound to set up a severe endometritis which, unless treated in the early stages, may easily spread forwards along the fallopian tubes and cause permanent sterility. To prevent the condition, the early treatment of cattle which have aborted and/or retained their placentae is essential, as not only will this prevent many cases of adhesions, but it will also help to clear up the endometritis and give the cow a better chance of holding to subsequent services.

The routine irrigation with Lugol's iodine solution in the treatment of infertility cannot be considered to end all sterility: were this indeed the case, treatment would truly be reduced to a level which any quack could undertake with a little practice. Among the points to be considered in the treatment of infertility, routine examination of the ovarian bursa should stand out before all else, for whatever the condition of the vagina, cervix and uterus, the animal cannot become pregnant if the fallopian tubes are occluded. Apart from bacteriological infection, small cysts are sometimes encountered in the region of the fallopian tubes. These are usually of little consequence but may lead to confusion. In one case, however, seen in the slaughterhouse, a cyst was found adjacent to the fallopian tube and the strands of connective tissue enveloping the cyst also enveloped a portion of the tube. Whether this animal was sterile on that side or not I cannot say, but it is reasonable to assume that the pressure set up by the cyst and the stricture due to the connective tissue bands may have been enough to prevent the passage of the ovum down the tube. These cysts do not appear in themselves to set up adhesions except of a very local nature. They are possibly intermediate stages of *T. hydatigena* (*C. tenuicollis*), *T. saginata* (*C. bovis*).

Before going into the technique of diagnosis of salpingitis and adhesions, it is necessary to review the anatomy of the area to be examined.

The fallopian tubes are about 20 cm. in length and flexuous, and owing to the pointed nature of the extremity of the uterine horn, the junction between the tube and horn is gradual and not abrupt as in the mare. This feature tends to increase the possibility of passage of bacteria forward along the fallopian tubes and the setting up of adhesions. The ovarian end of the tube opens out and becomes funnel shaped, the mouth of the funnel being 1 cm. or more across. There is no actual communication between the ovary and fallopian tube and the method by which the ovum passes across to the funnel-shaped end of the tube is uncertain. Ova have actually been known to pass from one ovary across the abdominal cavity and enter the fallopian tube of the opposite side. It is possible that a continuous stream of fluid propelled by the cilia of the cells lining the tubes flows through them towards the uterus and that the ovum gets carried along in this stream mechanically. Even so, the chances of an ovum becoming lost in the abdominal cavity would seem to be enormous.

The structure of the fallopian tubes themselves consists of a serous coat externally formed by the mesosalpinx, a fibrous coat beneath which are circular and longitudinal muscles, and it is lined by a mucous coat of ciliated columnar cells. The inner coat is thrown into folds, most of which run longitudinally except at the ovarian end where they become irregular. The blood supply is from the utero-ovarian artery.

The tubes are enclosed in a double fold of peritoneum which extends antero-laterally from the broad ligament, and when the pouch thus formed is opened out, the oviduct will be seen to be passing in an arc across the superior surface of the bursa. If three fingers are inserted into the pouch as far as they will go, the tube is always found passing over the tips of the fingers and this is the best position for palpation.

For the examination of the animal the faeces must first be removed. When the rectum is clear, the wall should be allowed to relax and the arm kept still until this has taken place. The right ovary is then palpated and picked up in the usual manner. It should then be held between the third and fourth finger and the thumb. The animal often strains at this point and the process has to be repeated. The first two fingers are now directed downwards, forwards and slightly laterally. If the fingers are kept stiff and turned slightly upwards, the edge of the bursa should be felt passing across the back of the distal joint of the first two fingers. The hand is then rotated in an anti-clockwise direction, the ovary being released and the first two fingers flexed at right angles at the same time. To get sufficient rotation of the hand, it is necessary to bend down slightly when examining the right side. The fingers can now be felt in the pouch which feels like a pocket turned upside down. The third finger is inserted along with the other two and the thumb then applied to the outer aspect of the pouch. When in this position, the fallopian tube of the normal animal passes over the tips of all three fingers and it can just be detected by gently rolling the fingers and thumb together. If hydro- or pyo-salpinx is present, the great enlargement of the tube will readily be felt. During the process of insertion of the fingers, strands of connective tissue may sometimes be felt breaking down, an indication that salpingitis is or has been present. Such slight adhesions, however, may not be sufficient to cause permanent sterility and pregnant animals are sometimes found with this condition.

In some cases only one finger can be inserted or perhaps the whole of the pouch may be occluded. Adhesions are frequently found passing across to the ovary and these may be felt breaking down as it is picked up. All degrees of severity are met with between the slight strands of connective tissue mentioned above to adhesions in which the ovary itself has become completely encapsulated by masses of new tissue. In very severe cases the uterine horns become involved and their shape may become difficult to define. In one animal examined recently, so great were the adhesions that difficulty was experienced in deciding which horn the catheter had been passed into, while neither ovary could be palpated.

To examine the left ovarian bursa a similar procedure is adopted as with the right but the rotation of the hand and arm can be carried out in one smooth movement, the fingers slipping into the pouch as the hand itself is turning, this time in a clockwise direction. In some cases several attempts may have to be made before the fingers enter the pouch but after a number of animals have been examined, the process becomes much easier.

Some animals are occasionally encountered in which it is quite impossible to carry out the technique already mentioned without the use of spinal anaesthesia but fortunately these are few and far between. The rectum in these cases seems to remain in a state of semi-tension, never relaxing sufficiently to allow the fingers to be introduced into the bursa.

Should a peristaltic wave pass along the rectum at any time during the examination, no attempt should be made to resist it and retain the fingers in the bursa or perforation of the rectum may occur.

One other point is to make sure that the nails of the hand used are cut reasonably short or bleeding will almost always occur and few things worry a farmer more than the withdrawal of a blood-stained hand from a cow's rectum.

Williams suggests a technique slightly different from that just mentioned, but his method is most satisfactory for palpation of the ovarian end of the tubes. As this is the most important part, however, it is probably just as effective as the method mentioned above. He suggests that the ovary should be grasped with the second and third fingers anteriorly and the thumb posteriorly. The index finger is then extended downwards, forwards and outwards and it enters the ovarian pocket. He mentions that the finest adhesions will break away before the fingers, but firmer ones limit motility and elasticity of the parts. The index finger is then left in the ovarian bursa and the thumb slipped forward so that the ovarian end of the tube is between finger and thumb. He admits that palpation of the main part of the oviduct is more difficult. The technique he suggests for this is to grasp the apex of the uterine horn with the thumb posteriorly and the first and third fingers anterior to it. The tube is held firmly; the third finger is then flexed sharply posteriorly and presses the proximal end of the mesosalpinx against the second joint of the thumb.

This second method suggested by Williams has the disadvantage that one is never sure if the slight thickening felt is actually the fallopian tube or a fold in the mesosalpinx, although the method he suggests for examination of the ovarian end of the tube is simple and effective. With three fingers in the pouch, however, a combination of these two methods is carried out and one knows the exact position of the fallopian tube, *i.e.*, running over the tips of the fingers. There is thus very little possibility of mistaking it for a fold of peritoneum, for the very presence of the fingers dilates the pouch and prevents folds being formed.

Considerable difference will be found in the size of the pouch in heifers from that in cows. In small heifers, the pouch appears to be much closer to the ovary and is of such size that only two fingers can be inserted into it, while in older cattle it is frequently possible to introduce all four fingers and the pouch is much further forward—so much so that it is necessary to draw the ovary well back before the fingers pass into it.

Considerable variation will also be encountered in individual cattle and this may lead to some temporary confusion, but if it is remembered that the older the cow the further forward the pouch is likely to be, there should be little difficulty in finding it.

[The following uteri were demonstrated: (1) normal; (2) three months in calf with slight bilateral adhesions; (3) severe tuberculous salpingitis and adhesions; (4) showing hydrosalpinx; (5-9) showing varying stages of salpingitis and adhesions. Demonstrations were also given on two living animals: (1) normal; (2) with salpingitis and adhesions in right bursa.]

* * * * *

DISCUSSION

Mr. D. N. SPRIGGS, referring first to technique, said that he found that when first attempting such examinations it was easier to introduce one's fingers into the pouch of the side corresponding to the hand used. In addition, it was advisable to take in a fold of rectal wall to allow for extension of the fingers into the bursal pouch.

He queried Mr. Rowson's statement about migration of the ova from one tube to the other, for to his knowledge it had never been conclusively proved to occur in the cow, although it was recognised as being common in the sow and occasionally occurred in the human. One did very rarely encounter cases in the cow of the corpus luteum of pregnancy being in the ovary of the opposite side to the pregnant horn, but in these cases it was suggested that the fertilised ovum passed down one horn to the body of the uterus and then became implanted in the other.

Mr. Rowson had mentioned in his paper that retained placentae are, together with abortion, probably the most frequent cause of tubal infection. He would like to quote Palmer's figures in U.S.A.: 44 cases of retained placenta were left untreated, expelling themselves in two to eleven days and compared with 44 normal cows. The subsequent breeding record was approximately equal. The author had suggested that one should not adopt a too-heroic treatment.

Mr. Rowson, replying, agreed that it was necessary to take in a fold of rectal wall before introducing the fingers into the pouch, otherwise they were liable to slide forward along the rectal mucosa without penetrating into the bursa. Regarding the point of migration of the ovum, he pointed out that he had not specifically referred to the cow, but migration was known to occur in some animals: the evidence put forward in the case of the cow was, as Mr. Spriggs had mentioned, the presence of a corpus luteum in the ovary of the opposite side to that in which the animal was pregnant. The question arose as to how the ovum reached this horn. Did it pass across to the opposing fallopian tube or did migration occur down the one horn and up the opposite member before implantation?

Mr. GEORGE EATON remarked that Mr. Spriggs had mentioned two points he had meant to raise, namely, retained placentae and migration of the ovum. There was a further point, however, in connection with occlusion of the fallopian tubes. What was the value of insufflation of the fallopian tubes in practice?

In reply, Mr. ROWSON stated that he had attempted insufflation of the fallopian tubes using excised uteri, but that in about 25 per cent. of cases rupture of the uterus had taken place before air passed through the tubes. He remarked that it had been hoped that a level of pressure could be fixed, allowing a safety margin, to which any uterus could be subjected, but that unfortunately the margin between the pressure required to force air through the tubes and that to cause rupture of the uterus was too small.

He had not tried it out on the living animal, but it would be necessary to use epidural anaesthesia, otherwise the straining of the animal would cause pressure on the uterus and great variations of intra-uterine pressure would result.

Mr. SPRIGGS said he would like to point out, in connection with this latter point, that in the human the disadvantage was that one could not palpate the fallopian tubes. In addition, insufflation was combined with subjective symptoms—such as pains under the diaphragm due to air—the presence of the air being detected by X-rays. Moench, in America, had also tried insufflation on excised uteri and in two cases air escaped into the parametrium. He strongly endorsed Mr. Rowson's opinion that the procedure in bovines was quite impracticable. A further point worthy of mention was the pathological significance of *C. pyogenes* in connection with salpingitis. Williams stated that it was the cause of a devastating serious infection of the tubes and it had recently been suggested as a common cause of salpingitis in this country. It seemed to him that further research was necessary before jumping to any conclusions on this point.

Mr. AUCHTERLONIE described a case of mummified foetus in a third-calf Guernsey cow which at 4 months had shown symptoms of an abortion which did not eventualise. The animal was not examined at this stage. Rectal palpation at six months showed a mummified foetus in the *left* horn and attempts were made to express a *right*-sided corpus luteum without success. Stilboestrol was injected, but owing to the use of ampoules from a different firm only 10 milligrammes was injected. This error was not discovered until a later date when 20 was administered. Expulsion of the foetus occurred at about the 36th hour (May 15th, 1942). The heifer had been examined a month later and the uterus gave every indication of returning to normal after two treatments.

Mr. ROWSON said that he had suggested the use of stilboestrol to Mr. Auchterlonie in the case of the cow with a mummified foetus and was interested to hear that after the second injection it had proved successful. He had found this preparation extremely efficient both in cases of mummified foetus and of pyometra.

Mr. WILKINSON recalled a case of pyometra in which there was a dead calf. He had treated the animal with stilboestrol and had been amazed at the speed with which the uterus contracted: within a week the uterus was down to normal size—moreover, the improvement in the general condition of the animal was noticeable.

Mr. ROWSON, in reply, mentioned that he would like to bring in two other points:—

Firstly, in the case of pyometras, particularly those due to trichomoniasis, the danger of mistaking the pyometra for pregnancy. The uterus frequently felt very similar to that of an animal 3½ months pregnant. The wall was thin, a fluid feel was present and as cotyledons and fremitus would not yet have developed mistakes could readily be made if rectal examinations alone were carried out. He also stated that many such cases had a small rat-sized foetus present in the pus and palpation of this would almost certainly lead to a diagnosis of pregnancy. Pinching up a fold of uterus and allowing it to slip through the fingers so that the foetal membranes could (in the normal animal) be felt slipping away was, in his opinion, unless the history of the animal was known, the only distinguishing feature by rectal palpation in many of these cases. Examination of the vagina, however, usually revealed a partly open cervix through which the little finger could be inserted, and the absence of uterine seal.

Secondly, with regard to stilboestrol, he mentioned that in anoestrous heifers his results had been extremely disappointing, and that although the animals often showed clinical signs of oestrus they frequently refused the bull and examination of the ovary had usually revealed the absence of any follicle. He had used pregnant mare serum on heifers which had failed with stilboestrol and results had been very good.

Mr. EATON remarked that in this connection he had treated four heifers recently and all came into oestrus within a few days. Two of these had returned in three weeks and nothing had been seen of the other two.

Mr. ROWSON asked Mr. Eaton if he had examined the ovaries of the animals, because in heifers housed as these were it was possible that the ovaries had been cycling, but that oestrus was not detectable as frequently occurred in milk animals during the winter. Mr. EATON replied that the ovaries of the heifers in question were not examined.

FODDER CELLULOSE

The Swedish International Press Bureau provides some interesting information regarding the established value attaching to the use of fodder cellulose in the feeding of livestock. It is explained that in the last two years Sweden has had to slaughter a considerable part of her livestock in consequence of the shortage of fodder that arose as a result of the heavily curtailed imports of forced feeding-stuffs and of the poor harveats in 1940 and 1941. The situation would, however, have been much more difficult had Swedish wood chemists not succeeded in developing a suitable kind of fodder cellulose, which could be used for eking out the ordinary fodder. If mixed with molasses or other "tasting" stuff, it has been found that the cattle eat and assimilate this fodder very well. Its weak point is that it contains only carbohydrates. During the past winter about 250,000 tons of fodder-cellulose was used by the Swedish farmers. To be guarded against a possible failure of this year's harvest as well, although the present prospects are much more promising than last year's, the Swedish authorities have recently made a contract with Swedish pulp manufacturers for the production of a total quantity of 55,000 tons of fodder cellulose during the period July, 1942, to May, 1943, that is about double the quantity of the preceding year. To turn out this quantity, the rayon pulp mills will also participate in this production, in addition to the ordinary sulphite and sulphate pulp mills.

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Enquiries have been made into the practicability of the wider use of edible seaweed for human consumption, but the Ministry of Food is advised that the nutritive value is not sufficient to justify the expense of collection and distribution.

CLINICAL COMMUNICATION

Suspected "Grass Disease" in Northamptonshire

W. A. DICKINSON, M.R.C.V.S.
Crowland, Peterborough

I have not previously encountered a case of so-called grass disease, but I believe the case recorded below to have been such, and, in view of reports that the disease is spreading southwards, I considered that it might be of some interest to other members.

Subject—A two-year-old Shire colt which had been at grass, but had been brought into the yard on the morning when I was called in—May 2nd.

Symptoms—These were as follows: extremely dejected appearance, dribbling of saliva, quivering of muscles in shoulder region and flank, patchy sweating, and a tucked up abdomen, temperature 102° F., pulse small and fast. No defaecation had been observed, and rectal examination gave one a feeling of stickiness of the mucous membrane. Only a handful of small, hard balls of faeces were obtained, and, in these, many strongyles, particularly *Tetracanthus*, were found.

The colt ate and drank practically nothing and at this stage I was in doubt as to my diagnosis, never having previously encountered a case of grass disease; moreover, although tucked up, the colt had not developed the typical grass disease appearance. Having found so many strongyles, although the symptoms were not those associated with red-worm infestation, I administered a dose of phenothiazine.

Course—On May 3rd the colt was somewhat brighter—temperature and pulse as before, no quivering of muscles, and no sweating—but no faeces had been passed. Rectal examination showed conditions similar to those found on the previous day and only a small quantity of hard faeces were obtained, which contained many red worms. An injection of Hewlett's carbamylcholine was given, which produced a small evacuation of the usual small hard balls, with more strongyles. At this stage the tucked-up appearance was more marked.

On May 4th no more faeces had been passed and the colt was more tucked up. I allowed it to run in the yard and after a while I observed the symptom which suggested grass disease. The colt went to the water tub and it was at once evident that there was a difficulty in swallowing, and, while drinking, or attempting to drink, the water was trickling back through the nostrils.

This is the history of the case. The colt lived for ten days and was then destroyed. The appearance of the abdomen gradually became exactly similar to that shown in the photographs in the addendum to Wooldridge's Encyclopaedia. No treatment had any effect in producing a normal evacuation of the bowels. This comprised aloes, salt and water by stomach tube, calomel and injections of Hewlett's carbamylcholine.

Little was found on *post-mortem* examination, with the exception of a marked emptiness of the intestines and corrugations of the mucous membrane of the colon similar to those in the ileum in Johne's disease in cattle.

NATIONAL MILK RECORDING SCHEME

Under the above heading *The Farmers' Weekly* of July 4th intimates that a country-wide milk recording scheme is being considered by the Milk Marketing Board and the Milk Recording Societies. "It is understood that the scheme will include both the official recording schemes already operating and the new minor scheme for the general farmer which is to be launched by the Milk Marketing Board in the near future in an effort to push up production. It was agreed at a meeting of the two authorities this week, that such a scheme should be run under one body."

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Weekly Wisdom

"*A former teacher of anatomy at Cambridge used to demonstrate in the lecture theatre the sciatic nerve with the remark, 'This is the longest and strongest nerve in the body,' an observation which was always greeted with loud cheers by the students present. The applause was redoubled when the lecturer continued by seizing hold of the femur and remarking, 'And this is the longest and strongest bone.' The laughter was not so much at the lecturer or his statements as an expression of relief that simple anatomical facts were being presented in a manner refreshingly free from detail.*"—From an Editorial, "The Teaching of Anatomy." *Brit. Med. J.*, 1942, March 21st, p. 390.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Aug. 5th.—Meeting of the Western Counties Division, N.V.M.A., at Exeter, 2 p.m.
Sept. 20th.—Entries for Miss Aleen Cust Veterinary Research Scholarship (R.C.V.S.).
Oct. 13th.—R.C.V.S. Council and Committee Meetings, Royal Station Hotel, York.
Oct. 14th.—R.C.V.S. Council and Committee Meetings, Royal Station Hotel, York.

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W.A.E.C. DEMONSTRATIONS

For the benefit of our readers we shall, whenever possible in future, announce the dates of pending War Agricultural Executive Committee demonstrations at which the N.V.M.A. is participating in connection with the scheme for the control of disease in dairy herds. An endeavour also will be made to notify meetings of the branches of the National Farmers' Union which are to be addressed by members of the Association. All local veterinary surgeons will be welcome at these demonstrations and meetings. It may not always be possible, however, to make these announcements—the first series of which appears in the notices column of this issue—owing to shortness of time between the event and the receipt by the Association of the invitation to participate.

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PERSONAL

Births.—Comyn.—At 48, Headlands, Kettering, on July 11th, 1942, to Pamela (*née* Tattersall), wife of R. B. Comyn, M.R.C.V.S., a daughter.

Ford.—On July 24th, 1942, to Alice, wife of R. Ford, B.Sc., M.R.C.V.S., D.V.S.M., of Cambridge, a daughter.

Henderson.—On July 26th, 1942, at Mount Alvernia, Guildford, to Beryl, wife of William MacGregor Henderson, B.Sc., M.R.C.V.S., a son.

Nisbet.—On July 26th, 1942, at the Fyfe-Jamieson Nursing Home, to Rena, wife of James Nisbet, M.R.C.V.S., Easterbank House, Forfar, a son.

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Will.—Major-General Sir Layton John Blenkinsop, K.C.I.E., D.S.O., of Millstead, Melbourn, near Royston, Director-General of the Army Veterinary Services at the War Office 1917-1921, who died on April 28th last, aged 79 years, left gross estate of the value of £7,560 16s. 4d., with net personalty £5,193 13s. 5d. Testator left all his property to his wife, Dame Ethel Alice Blenkinsop.

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ROYAL ARMY VETERINARY CORPS

The following announcement is made in the issue of *The London Gazette* dated July 24th, 1942: To be Lts.: Roy Francis Simon (236764), June 18th, 1942; Anthony Hyde Smith (236855), June 19th, 1942.

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GENERAL OBITUARY

Sir Phené Neal

[An Appreciation]

We have received the following tribute, from a member of the profession who at one time was intimately associated with him, to Sir Phené Neal, Bt., Lord Mayor of London, 1930-31, whose death at the age of 81 years has been recorded recently.

The passing of Sir Phené Neale, late Lord Mayor of London, will be deeply regretted by all members of the veterinary profession, especially those who knew him personally.

For many years, not only during his term of office as Lord Mayor but during all the period he was a Member of the Court of Common Council, he took a keen interest in our profession and was ever ready to support its claims for our correct position in relation to agricultural and public health matters. As a farmer, he steadily advocated the employment of veterinarians as advisers to farmers and dairymen, especially in connection with the use of tested bulls, periodical testing of cows, the culling out of scrub animals, the examination of animals in public markets, the inspection of meat, either acting alone or in supervising the work of lay inspectors. In this last-mentioned aspect he took a special interest and in the latest (English) edition of "Ostertag's Handbook on Meat Inspection" appeared these words: "Sir Phené Neal, J.P., C.C., late Lord Mayor and Ex-Chairman of the Cattle Market of the City of London, himself a farmer who has had a

long experience of markets and abattoirs, repeatedly urged at Congresses that all inspection in connection with markets, abattoirs, cowsheds, meat, milk and diseases of animals should be carried out by members of the veterinary profession only."

As a regular attendant at the Congress of the Royal Sanitary Institute he constantly repeated these opinions and was always ready to uphold them against any person who held other views. It was due to his initiative that while Chairman of the Cattle Market Committee, in support of the Farmers' Union, the Butcher Traders and the Canadian Government, a great meeting was held in the Guildhall resulting in the lifting of the embargo on Canadian cattle—an embargo which, in the opinion of many people, should never have been imposed. There seems to have been little doubt in the minds of many members of the veterinary profession that a wrong diagnosis had been made: a view which was substantiated later by the opinions of high authorities after the examination of the organs of hundreds of Canadian cattle slaughtered at Deptford Foreign Cattle Market, Birkenhead and Glasgow. In 1930 the International Veterinary Congress was held in London, this being afterwards described, in every country of the world represented by delegates, as an unforgettable event, due in a great measure to the exertions of Sir Phené Neal, who induced the City Corporation of the City of London to give the Congress a truly magnificent Reception. In that year, Sir Phené Neal, as Lord Mayor of London, was the guest of the evening at the R.C.V.S. dinner and made a speech which will live in the memory of all who had the honour and pleasure of hearing him.

In both civic and private life, Sir Phené was a strong man, mentally and physically; at any meeting where he was chairman he had so great an effect on an audience that he seemed to dominate it. He did not suffer fools very easily and had no use for verbose language: this was in a great measure due to his legal training and the power of condensed expression of opinion. On the Bench he was firm but unbiased. I well remember a case which was being tried before him in which he stated to the Prosecuting Solicitor: "I would like to consider this case more fully and give judgment later, if there is no objection." The Prosecuting Solicitor said: "I would prefer to have judgment now." Sir Phené Neal at once said: "Very well, you can have it, I am against you." Considered by many people, including city officials, as austere, he was, once he had formed an opinion, very definite.

Having had the honour of serving under Sir Phené Neal's chairmanship and on many committees, I found him a true friend, an able adviser and a supporter of the veterinary profession in all its activities. We are left to mourn the loss of one whose place it will be difficult if not impossible to fill. T. D. Y.

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LEGAL NOTES

A Question of Lameness.—After a hearing lasting five hours His Honour Judge Allsebrook, at Whitehaven County Court, gave his decision in favour of William West, farmer, Tarnflatts, Sandwith, who was sued by Mr. Henry Cass, of Springfield Farm, Eaglesfield, Cockermouth, for £70 7s. in respect of an alleged unsound mare. His Honour also found for West in a counter-claim of 7s. 6d. per week for the mare's keep.

Mr. Sumner (for plaintiff) said his client had purchased a mare at Harrison and Hetherington's Mart, Carlisle, which had been entered by Mr. West as sound. Mr. Cass found the mare lame and tried to get in touch with the auction company to comply with one of the trial conditions, but failed to do so on the phone. When he telephoned on the Saturday morning, February 21st, he was told he was too late. On the Sunday he went to Mr. West's and he contended that Mr. West affirmed that if the mare was lame he would take it back. He had her examined by Mr. J. McKie, veterinary surgeon, and he sent a copy of the latter's report to West and told him he was returning the mare, which he did on the following Wednesday.

Henry Cass, cross-examined by Mr. Edward Wooll, Recorder of Carlisle (appearing for defendant), said he had seen the mare tested in the usual way at Carlisle and saw no signs of lameness. She was sent home in a van and the next day she was only taken out of the stable for water. On the second day his son took her and she carted manure in the afternoon and he noticed she was lame when she came home. He admitted West told him "If she is lame something must have happened to her."

Mr. J. Syme, veterinary surgeon, who was on subpoena, said he had known the mare four years and in June, 1938, he attended her for an abscess on the shoulder. He saw no signs of a slipped shoulder. A slipped shoulder affected nerves and muscles.

Cross-examined, he stated he would say definitely that lameness could not be associated with the 1938 abscess. A horse could not work with a slipped shoulder. A sudden pull or slip might cause it.

Mr. J. McKie, veterinary surgeon, said he examined the mare on February 24th and she was lame. He localised the lameness to the shoulder and found that the muscles were quite deficient. It was old-standing and was impossible to have accrued in two or three days. In his opinion the owner who sold it should have known she was not sound.

In cross-examination Mr. McKie said the condition must have been there at least two months.

West said he had had the mare since 1936. He paid 42½ gns. for her as a three-year-old. He denied telling Cass he would take her back if she was lame.

Other witnesses were called, including Mr. John Fletcher, veterinary surgeon, Brigham, who said he was called in by Mr. Syme in May and examined the mare. She was quite lame and he gave her a thorough examination. The mare's condition was due to strain.

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Foot-and-mouth disease has been confirmed among cattle at Stanton Harcourt, Oxford.

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Professor J. W. H. Eyre, Emeritus Professor of Bacteriology, University of London, has been elected President of the Royal Institute of Public Health and Hygiene in succession to the late Sir Thomas Oliver.

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A number of hunters have recently been obtained from Ireland for drawing mail vans in the City and West Central areas of London. By thus increasing the use of its horse-drawn vans in London, the General Post Office is saving petrol at the rate of 5,000 gallons a year.

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An event exceedingly rare in this country has occurred in the Scottish National Zoological Park—the birth of an orang-outan. The parents, "Mickie" and "Minnie," were obtained through the kindness of the Netherlands, East Indies Government and Dr. Coenraad, director of the Zoological Park at Palembang, Sumatra, and they arrived in Edinburgh in August, 1937.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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SCHEME FOR THE CONTROL OF DISEASES OF DAIRY CATTLE

Sir,—Further discussion of the scheme will take place at a meeting of the Western Counties Division at Exeter on August 5th, and non-members are cordially invited. I will, therefore, not reply fully to the queries raised by Mr. Edwards in his letter which appears in the *Record* of to-day's date.

Any anxiety experienced by Mr. Edwards about our friends in Devon will be allayed by reference to the report of our Division which appeared in the *Record* (supplement) of March 21st of this year. The Cornwall Section, to a meeting of which Mr. Edwards refers, did not deny that similar conditions exist elsewhere—they probably do—but it was a sectional meeting and we thought it prudent to speak of conditions as we best know them. Judging from what has appeared in the Press, both lay and professional, we were amazed to find that such propaganda had been considered necessary to advertise what veterinary surgeons could do (incidentally we considered the claims to be in some respects extravagant), and we were driven to the conclusion that farmers in Cornwall have been in the habit of consulting veterinary surgeons much more freely than have farmers in the areas of those to whom these Press boosts appeared to be a good plan.

If anyone wants his confidence in the authorities shaken a little, I would refer him to the "Report on Diseases of Livestock," published by the N.V.M.A. in 1940, and ask him to read the paragraphs on johnin—and then ask him what he thinks has happened to the johnin? That is only one point.

In the meantime, Mr. Edwards can rest assured that long before the scheme came into sight, the conditions which it includes were receiving the careful attention of practitioners in Cornwall, and when the scheme appeared acquaintance with current literature prevented them from standing open-mouthed at what appear to have been revelations to, I feel sure, a relatively small number. Whether the scheme will prove to be premature, ectopic, or a beauty, must for the present remain a matter of opinion. Unfortunately, as in the case of many much-advertised things, Press notices are in danger of exaggerating virtues of the scheme. It reminds me of the small boy who inflates a toy balloon with pretty pictures painted on it. He blows and admires the enlarging pic-

tures—eventually he blows too much—the balloon bursts and his eyes are stung.

Yours faithfully,

Penzance. S. J. Motton.

July 18th, 1942.

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C.S.1: Preliminary Criticisms

Sir,—This belated document is now to hand and preliminary consideration of it immediately raises a point upon which there should be early discussion. I refer to the final paragraph headed "General," which frankly and rightly admits that the approved curative and preventive treatments may not prove successful in every herd, and concludes by authorising the practitioner, with the owner's consent, to use alternative treatments *at his own expense*.

Prior to the publication of the memo. I was suffering from the logical delusion that in the event of the approved treatments proving unsuccessful further alternative treatment would be a matter for private arrangement between the owner and the practitioner. This delusion was fostered by the remarks of the chairman of the Survey Committee to the Guild of Agricultural Journalists, reported in *The Veterinary Record* of May 16th last. When dealing with infertility and the induction of oestrus with biological products (presumably oestrogens) he is reported to have said "It was quite obvious, with the price of these products, they could not be utilised within the scheme; they must either be *provided as an extra and paid for by the farmer*, or they must be provided by the Government, possibly at a reduced price."

The ruling in this memo. clearly forbids this, as although alternative treatments to the approved one of "manipulation of the ovaries" are permitted, the final paragraph mentioned above says definitely "*but all methods of treatment applied will be covered by the inclusive fee prescribed in the undertaking.*"

To carry the point a stage further, the disease group in which the approved treatments are most likely to fail is mastitis. What is to be the position where a practitioner deems it advisable to apply alternative treatment involving the use of expensive and "experimental" members of the sulphonamide group, toxoids or other biological products? In my experience, certain strains of haemolytic streptococci, as opposed to non-haemolytic strains (*Str. agalactiae*), are not so amenable to the approved treatments, and in one particular herd I made no headway whatsoever until I had had an autogenous vaccine prepared and used *throughout* the herd: since then, now a matter of ten months, I have had no clinical cases of mastitis. Such an experience justifies repetition in intractable herds, but biologics cost money.

In the past much useful clinical research has been carried out, either intentionally or unintentionally, by enterprising owners and veterinary surgeons, where the former has been prepared to pay for the latter's time and the necessary drugs or biologics. As I see it, unless this restriction is removed, all such private clinical research must cease in "Panel" herds; because no practitioner can afford to incur more than the barest minimum of expense if he is to make even a small profit out of the prescribed fees. *Frankly if the approved treatments fail I shall decline to do anything further in the matter, if I have to incur expenses which I am not permitted to recover*: I shall have fulfilled my contract by carrying out the prescribed treatments and there the matter will end, to everyone's dissatisfaction.

This matter should be thrashed out at a very early date, as I can foresee many hard-working and conscientious practitioners becoming aggrieved and disinclined to co-operate wholeheartedly in the scheme. We have before us an example of lack of co-operation and understanding between the N.V.M.A. and the Ministry. On the one hand a responsible officer of the Association makes public statements of a categorical nature and within six weeks the Ministry completely reverses the position. I must confess that this sort of thing tends to shake one's confidence in our present-day leadership. I might add that the Chairman of the Survey Committee, at a meeting of the "Sussex" at Brighton during the summer of 1941, *in the course of an unrecorded discussion on the proposed scheme, in reply to a query raised by me, assured members present that a further opportunity would be granted to the rank and file of the profession to debate and approve or disapprove the scheme in its final form.* This opportunity has never been accorded to us.

Although originally a staunch opponent of the scheme, owing to my deep distrust of the ultimate intentions of and lack of confidence in the efficiency of our ever-growing bureaucracy, as it has been launched officially I am prepared to adopt the traditional democratic attitude of "the beaten minority," and to co-operate conscientiously in an endeavour to make it a success. Success may come, but criticisms such as the foregoing must be raised, thoroughly ventilated and satisfactorily met if the wholehearted support of the profession is to be assured.

Fairfield,

Crowborough. Yours faithfully,

July 16th, 1942. T. A. R. Chipperfield.

CONTAGIOUS ABORTION

Sir,—Since contagious abortion holds a prominent position in the list of diseases to be dealt with under the Survey Scheme, the following facts may be of interest to members of the profession.

On May 10th I sent three samples of blood to a laboratory for agglutination testing for contagious bovine abortion:—

Cow A—aborted 11 days previously
Cow B—aborted 11 days previously } all from the same herd.
Cow C—aborted 2 months previously

All were returned as negative—much to the owner's satisfaction—and my astonishment. A week or two later another cow in the same herd aborted, and accordingly eleven days later (on June 1st), I sent a sample of blood from this cow (cow D)—together with further samples of blood from cow A and cow B—to a different laboratory. All were returned as positive. (Owner furious.)

As a further check, on June 9th I sent samples of blood from cows A, B, C and D to a third laboratory, and they were all returned as positive. (Owner talking of taking legal action!)

The explanation given by the original laboratory for the "unfortunate" negative results was that some cows do not reveal antibodies for several days or weeks after abortion, and an exceptional cow may go over three months after aborting before antibodies are detectable in the blood. (Owner's faith in veterinary science now becoming decidedly shaken—and mine beginning to waver.)

To try to clarify the position I wrote to four of the leading laboratories asking at what period after abortion could the agglutination test reliably be applied.

The replies were as follows:—

Lab. A.—Four to six weeks, with a retest four weeks later if a doubtful reaction is obtained.

Lab. B.—At the time of abortion, with a retest two or three weeks later if a negative result is obtained.

Lab. C.—Two weeks, with very few exceptions.

Lab. D.—This was the laboratory of the Ministry of Agriculture and I would like to quote their letter in full: ". . . the *Br. abortus* agglutination test may, in the vast majority of cases, be reliably carried out immediately after the act of abortion. Many people, however, allow a period of from 7—14 days to elapse after the act before taking the blood sample. I regret that I am unable to state what percentage of infected cows will not develop agglutinins in their blood for one, two or three months after abortion, but it may be assumed that the exact number is extremely small—so small that, for all practical purposes, it can be ignored."

In the words of a famous broadcaster, "What would you do, chums?"

Yours faithfully,

Veterinary Infirmary, J. V. S. Rutter.

Gwynne House, Hereford.

July 16th, 1942.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV)

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Parasitic Mange*	Sheep Scab	Swine Fever
June 16th to 30th, 1942	15	23	—	1	17
Corresponding period in—					
1941 ...	9	—	2	3	34
1940 ...	11	—	—	—	216
1939 ...	29	6	1	5	155
Total Jan. 1st to June 30, 1942	172	45	26	117	232
Corresponding period in—					
1941 ...	274	255	10	134	795
1940 ...	281	19	14	115	2,111
1939 ...	452	44	31	152	1,051

NOTE.—The figures for the current year are approximate only.
* Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at 30th June, 1942, was as follows:—

England	Wales	Scotland	Total (Great Britain)
3,906	9,020	3,361	16,287